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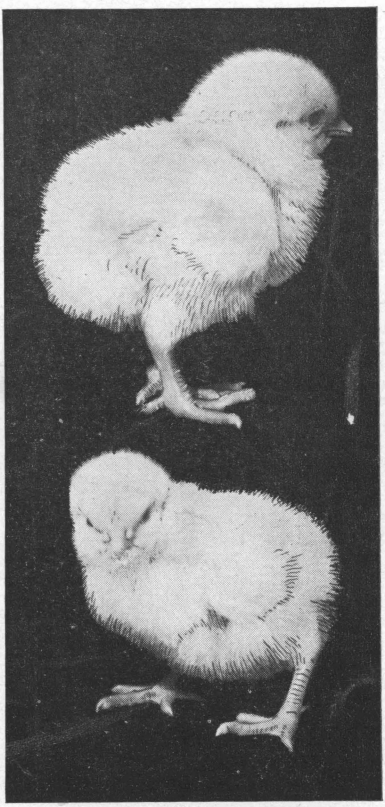
GROWING BABY CHICKS



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O. B. Martin, Director, College Station, Texas

FOREWORD

GRANDMOTHER successfully raised chicks with setting hens, but she also drove to town in a wagon. Her market was her own table and small surplus sales to neighbors in town. Transportation has so improved since her day that wider markets have opened up a demand for mass production. Chick raising has changed from a household art to a scientific business.

Expanding the farm poultry business has been made possible by new knowledge of feeds and chick habits. Large scale production depends on two things: keeping birds healthy in large flocks, and developing labor saving equipment. It is true that some succeed with little equipment, but this requires more labor and better management. The better way seems to be a combination of good management and simple, inexpensive equipment. This need not be bought. Texas farmers are making very satisfactory brooders, feeders, waterers and other equipment for themselves. After all, the particular tools used are far less important than the way they are used. Close attention to small details and regular care is the key to successful chick raising. There is no substitute for good management.

Every successful poultryman has a way of raising chicks —to him the best way. Out of the many methods, we have chosen for discussion those which have proved most practical for Texas farms. Strictly commercial poultry farms may find that the suggestions do not fit their conditions. But, large or small, successful poultrymen observe the same fundamental rules.

Raising Baby Chicks

Paul A. Cunyus
Assistant Extension Poultry Husbandman

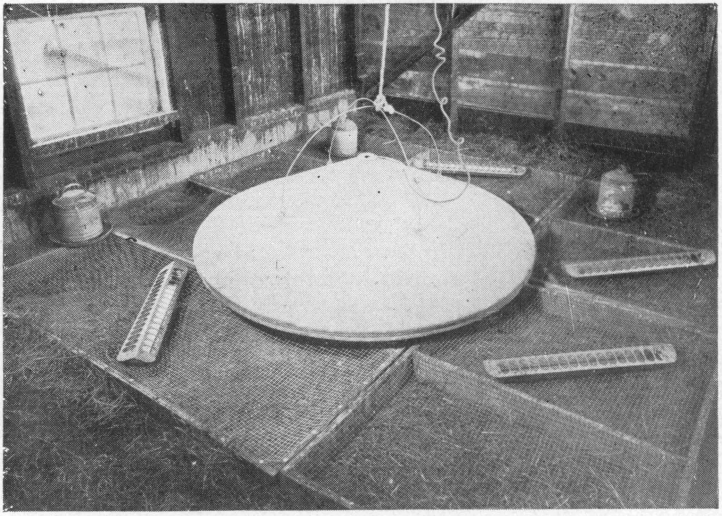
LATE HATCHES and cheap chicks are usually expensive. Late hatched chicks miss good broiler prices for surplus cockerels and generally have greater disease loss. The pullets do not develop as rapidly nor as completely. Best hatching dates may range from early February in South Texas to late April in the Panhandle. A low priced chick is usually of low quality, yet takes as much time and money to raise as a good one. Quality not only means strong, husky chicks that live, but includes the egg producing ability bred into them for generations. Reputable breeders or hatcherymen with highly bred flocks are within driving distance of most farmers. Buying chicks near home avoids the hazards of long shipments and makes adjustments for loss much easier.

Be Prepared

Whatever kind of house the chicks are brought to, or its equipment, everything should be carefully prepared in advance, for the first few days is the critical time. Indeed, half the success in raising chicks depends on having a good clean brooder house and all its equipment in perfect working order at the start. Thoroughly clean with a scraper and disinfect. Boiling hot lye water, 1 can to 12 or 15 gallons is an efficient and economical disinfectant. Dry out the house and run the brooder for at least a day to be sure it is properly regulated. Check up on feeders, waterers, fuel supply and all other tools.

Make Sanitation Easy

Unless cleaning is made easy, few do it often enough. Good litter scattered a few inches deep over the entire floor absorbs wet droppings and makes cleaning days further apart. It also prevents chicks from picking at the filth. Prairie hay and oat, rice, or wheat straw are satisfactory especially if chopped finely. Peat moss is excellent but more expensive. Shavings or sand serve very well if plenty of feed is always available, otherwise the chicks will eat the litter.



Hardware cloth floor helps to prevent disease.

A false floor made of hardware cloth (½ in. hail screen) and used as indicated in the picture keeps chicks away from filth. With such a floor a weekly cleaning is enough. The frames of 1 x 4's or 1 x 6's are built in convenient size of 3 by 6 feet with a center crosspiece to prevent sagging. Several frames are put together with a floor extending about three feet beyond the edge of the brooder for the feed and water vessels to sit on. Temporary roosts on a movable wire-covered frame 3 feet wide aids in teaching chicks to roost early and also protects them from droppings. (See bulletin on Equipment).

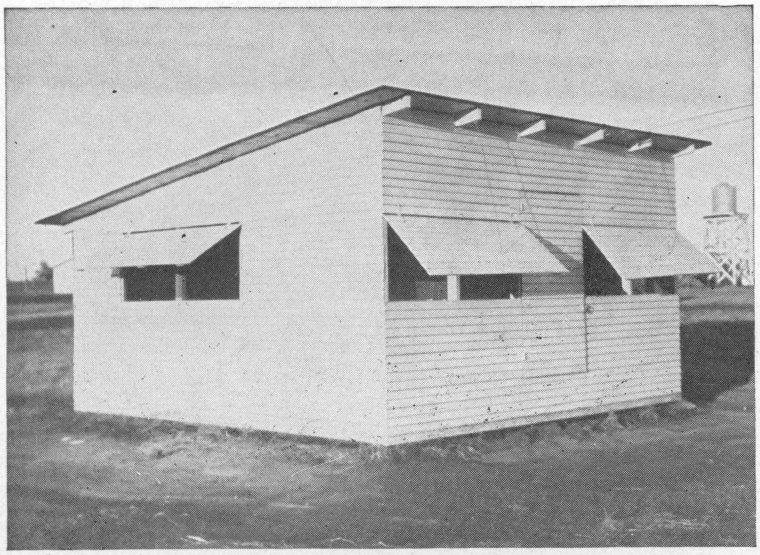
Filthy ground is the chief breeding place of diseases—and the hardest to keep clean. Frequent plowing or exposing to direct sunlight makes for cleanliness. It is far wiser, however, to change locations each week or oftener and keep on fresh, clean soil. Colony houses are easily moved if they are built on sled runners for the purpose. With stationary houses, a wire or concrete "sunporch" is far better than bare ground during the first few weeks. Another method is to make a temporary wire enclosure which is moved frequently to the various sides of the house. In any case, growing green feed around the house is a good practice, not only for the greens afforded but because it forces plowing.

Colony House Is A Good Unit

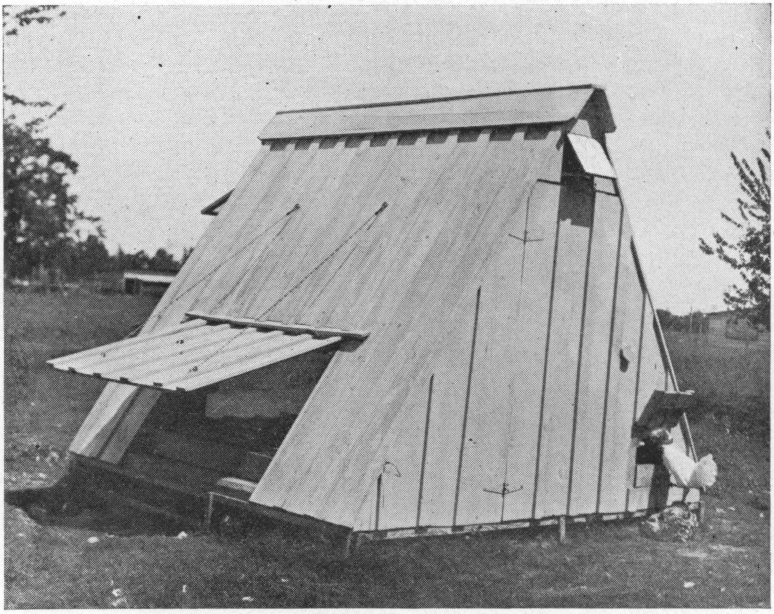
A small 10 x 12 foot movable house is ideal for the average farmer and makes an economical unit for the poultryman. Heated by a 52-inch hover or brick furnace it takes care of 350 chicks comfortably, which is all an experienced chick raiser wants to brood together. No special type of construction or ventilator is best. The only requirement is that the walls and windows be tight and adjustable to suit the weather without causing drafts.

The shed roof colony house is most commonly used. Built on 4 x 4-inch sled runners, it is easily moved to clean ground often. If immovable, the house may have a fenced-in sunporch as large as the house to aid in sanitation. Large windows which may be opened wide allow the house to be used as a pullet range house during the summer.

Recently an A type combination brooder house and range shelter has become popular. It is lighter and stands moving about without serious damage which is not always true of



This shed roof house may be built smaller and on runners for moving easily.



An A-type combination brooder and range house has many uses.

the shed type. When used for brooding, it has a solid floor (in sections) and the ventilators are arranged to suit the weather. Later it serves as an excellent summer range shelter after a wire floor has replaced the other, roosts are installed, and the hinged sides are raised.

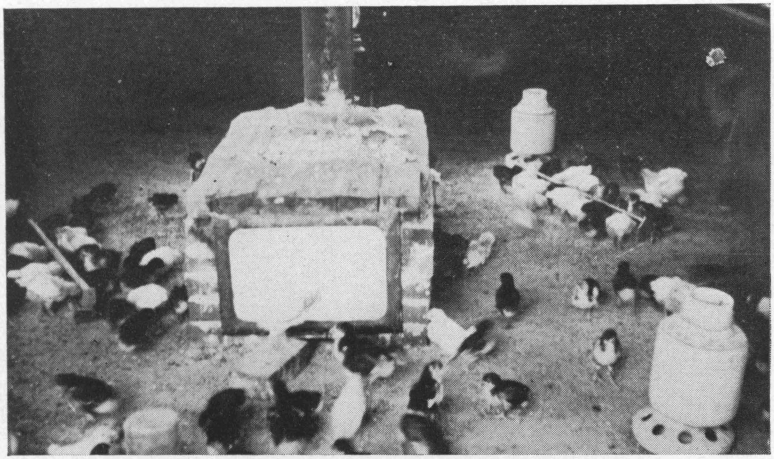
Plans for building either of these houses are available free from the Extension Service.

Depression Brooder Is Popular

A depression brooder can be built by anyone into any immovable type of house and it costs little to operate—an almost ideal combination. Old bricks or stones, some iron bars, clay or cement for mortar, a few joints of stove pipe put together, and one has a fool-proof heater for chicks which needs attention only twice daily. A furnace about 4 feet long by 1½ feet wide takes care of 350 chicks in a 10 x 12 foot house. The chief disadvantage is that it makes the house immovable and sanitation more difficult.

Dirt or concrete floors are best, but a wooden floor may have a hole cut in it and a foundation for the structure built up from the ground, leaving 6 or 8 inches of brick wall between the fire-box and the wooden floor. Mortar made of clay alone will serve, but one composed of one part cement to three parts sand is better. Mortar joints are about one-half inch thick, and two inches of mortar is placed over the brick cover. Take the usual precautions against fire hazards by placing a roof flange so that the stove pipe will be held firmly at least two inches from any wood. There must be a damper in the stove pipe joint next to the stove.

The materials necessary are: 110 bricks; 1 sack cement; ¼ cubic yard sand; 16x20 inch piece of sheet iron for door; 7 heavy iron bars 2 feet long; 1 roof flange; 4 joints of 6 inch stovepipe; 1 stovepipe damper. Clay may be used for mortar and stones for bricks. Oil drums are sometimes used for fire-boxes, but are not recommended.



Brick brooders are cheaply built and operated.

About a full day is required to heat the furnace and house before chicks arrive. By firing at bed time with green wood and regulating the draft carefully, a good comfortable temperature can be maintained all night. No canopy is necessary except possible in large rooms with high ceilings. The chicks will adjust themselves to the most comfortable areas and seldom crowd.

Comfortable Chicks Grow Fast

"Money makes the mare go," but won't make chicks grow—for this it takes consistent care and attention to many details. Comfortable chicks are quiet chicks, and grow fastest. Keep them comfortable in any way possible, but remember that there are many things besides temperature which cause acute discomfort or serious trouble.

The simplest way to regulate temperature is to hold it around 100 degrees near the brooder and allow the chicks to arrange themselves. For the first few days it is wise to make them stay within a wire guard a couple of feet from the hover. When it is removed, prevent crowding in corners by stretching wire or cardboard across them.

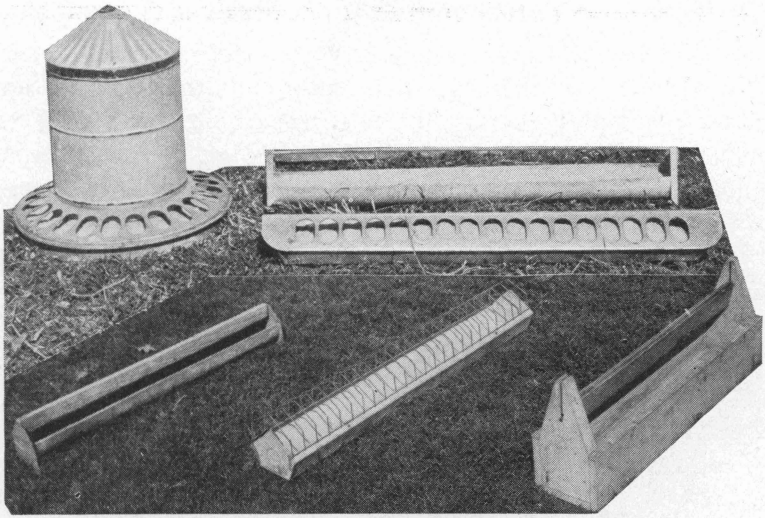
Plenty of fresh air is just as essential. Stuffy quarters account for much of our respiratory troubles. There cannot be too much fresh air so long as there are no drafts.

Crowding 500 chicks where 350 ought to be is probably the most frequent cause of trouble. Nature usually reduces it to the proper number or less through death losses. Lack of water or feed for even a short time may start toe picking or cannabalism.

Select Equipment Carefully

The feeding devices illustrated are some of the most satisfactory ones. The larger one on the right is designed for older growing stock. Simplicity and cheapness are essential, but of greater importance are protection from filth and waste of feed. Wire guards or wooden "reels" keep chicks from stepping in the troughs. Waste is lessened by "lips" along the sides varying in width up to one inch according to size of trough. "Bucket type" containers or covered metal troughs with "peep holes" (see picture) are more wasteful and less sanitary.

Waterers take a variety of forms, but the essentials are: easily cleaned, protection from litter and filth, provision for an adequate supply. Each one of ordinary size will accomodate about 75 chicks.



The three feeders in front are the best types.

Waterers—Keep them clean is the main idea.

Feed Carefully And Wisely

The mother hen does a pretty good job of providing for a few chicks, but when the same thing is attempted with hundreds of chicks under highly artificial conditions, it is a bewildering and expensive job. Good feed is not necessarily costly, but regardless of cost, it does not pay to skimp on starter mash. Lack of vitamins and minerals seems to create the most trouble. Nature provides plenty of vitamins in sunlight and green feed, but often one must use expensive substitutes such as cod liver oil, alfalfa leaf meal, and others. Minerals are supplied in the mash by finely ground oyster shell and bone meal.

Many poultrymen have found it practical to use a commercial chick starter, but for those desiring to use a home mixed ration the following mash formulas are among the good ones:

Item	Starting Mash (First 6 Weeks)	Growing Mash (After 6 Weeks)
Corn meal (yellow)	55 pounds	36 pounds
Wheat bran	—	20 pounds
Wheat grey shorts	20 pounds	20 pounds
Meat and bone scrap	6 pounds	5 pounds
Dried buttermilk or skim milk	6 pounds	—
Cottonseed meal	6 pounds	10 pounds
Alfalfa leaf meal	5 pounds	5 pounds
Oyster shell	1 pound	2 pounds
Bone meal	—	1 pound
Salt	1 pound	1 pound

Don't juggle these formulas around except: Fresh skimmilk or buttermilk may replace the dried milk. A six pound increase in meat scrap will also replace dried milk. Alfalfa leaf meal is not necessary if plenty of fresh, tender, green feed is available. Ground milo may be used, but yellow corn meal is preferable. Ten pounds of rice bran can replace an equal amount of corn meal. When sunlight is insufficient, add high grade cod-liver oil as recommended by the manufacturer, but never let it amount to more than 2% of the ration.

It is wise to limit the feed eaten the first few days(except where batteries are used), but after that, keep plenty

of this starting all-mash ration available at all times. About the sixth week is the usual time to begin using the cheaper growing mash and to begin feeding cracked grain.

Fatten and Sell Cockerels Early

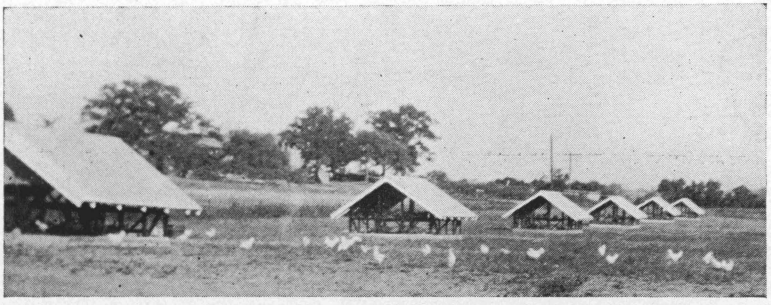
When cockerels reach about one pound in weight, they are ready to finish for market in a fattening battery or other closely confined quarters. Only heavy breeds should ever be kept for fryers. Either of these rations is suitable for quick fattening of broilers:

	No. 1	No. 2
Corn feed meal	60 pounds	60 pounds
Wheat grey shorts	24 pounds	30 pounds
Dried milk	10 pounds	—
Cottonseed meal	5 pounds	—
Meat and bone scrap	—	9 pounds
Salt	1 pound	1 pound

Mix with milk or water to a sloppy consistency and feed three times daily what the birds will clean up readily. Give no water, but in hot weather add more water in the mix. Never feed longer than 14 days.

Feed Pullets According To Hatching Period

Early hatched pullets develop more normally if allowed plenty of grain after about the tenth week. On range "cafeteria system", free choice grain and mash at all times, is good for the pullets until natural egg production starts. It saves labor also. Late hatched pullets need more particular care to avoid diseases and less grain to force quicker maturity. A limited



The ideal way to raise pullets is to put them on the range and provide shelters.

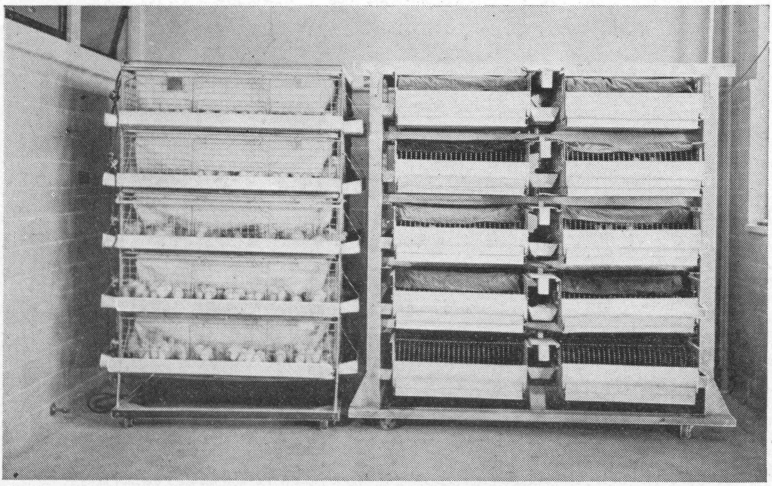
amount of grain fed in late afternoon hastens the time of lay. As a precaution against coccidiosis, 5 pounds of dried milk can replace 5 pounds cottonseed meal in the mash, especially for late pullets.

Growing stock without shade and lacking plenty of green stuff are likely to have dull appetites. Range shelters as illustrated are not expensive, or a simple thatched shade about five feet high can be built from scrap lumber and old wire. Not enough vitamin A (gotten from green feed) is responsible for much of the late summer colds or roup.

Battery Brooding

Storage or battery brooders have rescued many hatcherymen from heavy losses on unsold chicks, and many have hailed them as the cure-all for a stagnating poultry industry and have discarded older methods of brooding entirely. Some of the advantages claimed are: (1) Labor saving, (2) space saving, (3) less disease loss, (4) more uniform growth—all of which are debatable. The disadvantages have not been so quickly nor readily admitted. Nutritional troubles continue to vex in spite of increased knowledge of feeds. Close physical contact and other factors result in cannibalism, poor feathering, and the like. Cost of equipment is high, and large scale operations demand still more equipment for regulating ventilation, humidity, and temperature in specially constructed buildings. Disease control is not as effective as first hoped.

Farmers and small scale poultrymen have found battery brooders to be costly pieces of added equipment. Their principal uses are (1) for emergency holding of surplus chicks, (2) for broiler production, and (3) for starting pullets not longer than six weeks. The type having a heated section and a cooler portion is nearer natural conditions and is more foolproof as the chicks can adjust themselves to the heat. Homemade batteries are of doubtful economy. Seldom are they as easy to operate and keep sanitary as they should be. Low first cost is their only advantage. Suggestions can be secured from the Extension Service.



Either of these types of battery brooders is good.

Crowding is a common fault in battery brooders. Observe these space requirements and do not lower the figures:

1 to 3 weeks—10 square inches per chick
3 to 6 weeks—20 square inches per chick
6 to 9 weeks—40 square inches per chick

In warm weather capacity is about one-fourth less. Either 5 or 6 section units can be bought, each 30x30 inch section with a maximum of 90 day-old chicks.

Successful operation demands accurate control of ventilation, humidity, and light as well as temperature. Each is vitally important.

A room temperature of 70 degrees F. is desirable where the heated compartment is held at 95 degrees the first week and 90 degrees thereafter. In batteries heated throughout, lower from 95 degrees F. to about 75 degrees F. by fourth week.

Humidity must be kept high to make the chicks comfortable and promote further growth. Where special humidifiers are not used, dampening the floor often serves to keep the air feeling moist.

Ventilation must be ample to keep down odors. Drafts can be prevented by baffles of wet sacks hung before the windows.

Subdued light is preferred to help prevent cannibalism. All direct sunlight must be avoided.

Sanitation is aided by cleaning the droppings daily. While chicks are young, a paper covering makes this easy. Later a little lime on the trays keeps down odors. Peat moss is excellent, but bulky. The whole unit should be cleaned and disinfected thoroughly between broods.

The highly artificial conditions in a battery brooder require a carefully balanced feed, especially in regard to vitamins and minerals. The ration given on page 10 is suitable if one-fourth of one percent fortified cod liver oil is added. The fortified oil is suggested because of the small amount of undesirable fats in it. Follow manufacturers' directions where a different oil is used. Every ingredient in the ration is essential and the amounts of each, except possibly the corn meal and wheat shorts should not be varied greatly except by one who knows feeds very well. This ration should not be ground too finely. It can be fed without grit, green feed, or grain up to 6 or 8 weeks. Some prefer to teach the chicks to eat grain earlier.

Dead Chicks Pay No Bills

Vigorous chicks, strict sanitation, and constant care will prevent most diseases. Once started, few disease are curable. The money spent for remedies would be better used in buying feed and proper equipment.

Common Diarrhea: This is not a disease but a symptom of various digestive disorders. Some causes are: weak chicks due to inheritance or faulty incubation; overheating or chilling during the first few days; over-eating the first few days. If a small lump or sac of yolk remains unabsorbed, attached to the intestine, no medicine or other treatment is effective. Dope in the water or feed seldom does any good. Diarrhea usually accompanies pullorum, coccidiosis, and brooder pneumonia and is discussed under those diseases.

Pullorum Disease: Known as B. W. D., this disease may be carried through the egg from an infected hen to the newly hatched chick and may cause high mortality just before and

after hatching. It may spread rapidly through feed, water, or litter. External symptoms may not be noticeable, but an increasing death rate to the eighth day and then a rather sudden let-up is a common indication. A positive diagnosis is impossible except by an examination of live specimens in a laboratory.

The best policy is to get eggs or chicks from tested pullorum disease-free flocks hatched in thoroughly fumigated incubators, and rear them in disinfected houses on fresh ground. Once an outbreak occurs, thorough cleaning and strict sanitation is the best remedy. Disinfecting houses with boiling hot lye water, 1 can to 15 gallons, is good.

Coccidiosis: This disease usually attacks chicks 2 to 10 weeks old although older birds are susceptible. Large numbers may die suddenly. External symptoms are bloody brown ish droppings; ruffled feathers, or sweaty appearance; sleepiness, pale head and shanks. Grown birds show leg weakness, paralysis, and blindness. Internally the intestines are usually blood-streaked. Blood in the ceca is considered positive edidence.

No medicine is very effective, and is of no use whatever unless these rules are observed: Confine chicks in an area that can be easily cleaned; move to new location if possible, if not, disinfect house with hot lye solution; keep everything dry, and dry-clean daily by removing all litter and droppings. Instead of medicines (a) feed liquid milk instead of water and limit grain and mash eaten, or (b) feed a mash containing 40% dried milk. Continue only as long as necessary. Dryness, cleanliness, and feeding milk are the best preventatives or curatives known.

Brooder Pneumonia: This is a disease of the respiratory organs caused by a mold, usually gotten from moldy, damp litter or musty feed. Ordinary sanitation should prevent most of it. Sprays are of little or no value.

(Note: The following troubles are commonly found in battery brooding, but may occur under any conditions.)

Cannibalism is usually due to (1) too much light, (2) dry air, (3) crowded conditions, (4) unbalanced feed. The causes suggest remedies.

Poor Feathering is sometimes inherited in a strain of chicks, but may result from high temperatures or low humidity. It is sometimes caused by too much bone meal. Where meat and bone scrap are used as suggested, no additional bone meal is needed. The 20% shorts included in the ration aids feather growth.

Leg Weakness of the simple type with soft bones and swollen knee joints is either lack of vitamin D (supplied by direct sunlight or cod liver oil) or improper amounts of minerals. This all depends upon the ration.

Slipped Tendons or Deformed Legs is a special type of leg trouble where the big tendon slips to one side of the knee joint, drawing the leg around into an awkward position. It seldom occurs when the ration contains 20% wheat shorts.

A Roupy or Sore Eye condition is usually due to an improper ration lacking in vitamin A, though occasionally caused by poor ventilation. Alfalfa leaf meal is needed in the ration to prevent nutritional roup.

A Sore or Rotting Beak results from an impaction of finely ground feed. It is infectious and spreads as one bird pecks at another that has the trouble. Prevent it by grinding the feed coarser.

Fowl Pox sometimes runs rampant and is difficult to check. Removing infected chicks promptly and keeping disinfectant in the water may help some, but prevention is the only way to handle the trouble once it becomes prevalent. Vaccination at an early age is necessary. The feather follicle method is recommended. In vaccinating very small chicks, pluck out the down along the breast about the size of the finger nail and brush the vaccine across the skin twice lightly with the brush provided.

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